GEOMETRIC PROBABILITY

CROSSROADS ACADEMY
AMC–8 PREPARATION

I) In rectangle ABCD, AB=1 and BC=2. Point X is selected at random within the rectangle. What is the probability that the area of triangle ABX is more than twice the area of triangle BCX?

II) Concentric circles have radii of 3, 4, 5, and 6 cm. What is the probability that a random point selected with the large circle is in only the largest circle or inside the 4cm circle but outside the 3cm circle?

III) A point is randomly selected inside the right triangle ABC. The point X lies on the hypotenuse AC with AX=3 and CX=2. What is the probability that a random point selected inside the triangle lies in BCX?

IV) The square ABCD has side length 3. If a point X is selected at random what is the probability that the quadrilateral ABXD has an area greater than 4 square units?

V) One side of a triangle is 5cm long. Two (not necessarily integer) numbers are randomly selected between 0 and 10. What is the probability that the two numbers can be the lengths of the other two sides of the triangle?

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a) Point X is randomly selected within square ABCD. What is the probability that angle AXB is acute?

b) Three circles of integral diameter are arranged so that each is entirely within the next larger circle. The probability that a random point selected inside the largest circle lands within the middle circle but not the smallest circle is exactly 1/2. What is the smallest possible area of the middle circle?

c) Two distinct pairs of vertices are randomly selected on a cube and each pair is connected by a line segment. What is the probability that the two line segments intersect?

d) A stick is broken at random into three pieces. What is the probability that the pieces can form a triangle?